

## CLAIMS

1. A method for cooling a seal located in a wall of a chamber and through which a movable shaft passes, said seal being heated by hot pressurized vapor that leaks through a labyrinth into the chamber and internal friction, said method comprising the steps of: (a) providing a chamber in which the seal is located and into which said hot pressurized vapor leaks; (b) injecting cool liquid into the chamber in which the seal is located; and (c) cooling and condensing said hot pressurized vapor in said chamber thus cooling the seal and reducing the pressure in the chamber.

2. A method according to claim 1 comprising the step of providing a pressure chamber for containing the hot pressurized vapor within which a turbine wheel is mounted on said shaft, and vapor leaks past a labyrinth mounted on the shaft between the turbine wheel and the seal.

3. A method according to claim 2 comprising the step of adding the liquid to the chamber in which the seal is located by injecting the liquid into said chamber near a disc mounted in the chamber, said disc being mounted on, and rotatable with, said shaft.

4. A method according to claim 1 for use in a power plant that includes a vaporizer for vaporizing a working fluid, a turbine mounted on said shaft for expanding the working fluid, a condenser for condensing expanded working fluid, and a cycle pump for returning condensate from the condenser to the vaporizer, and comprising the step of supplying the liquid exiting said chamber in which the seal is located via a vessel to a line exiting said condenser and connected to said cycle pump.

5. A method according to claim 4 comprising the step of adding the liquid to the chamber in which the seal is located from the output of the cycle pump.

6. Apparatus for cooling a seal located in a wall of a chamber and through which a movable shaft passes, said seal being heated by hot pressurized vapor that leaks through the seal into the chamber and internal friction, said apparatus comprising: (a) a chamber in which the seal is located and into which leaks the hot pressurized vapor; and (b) means for injecting liquid into the chamber in which the seal is located such that the hot pressurized vapor is cooled and condenses in said chamber, thus cooling the seal.

7. Apparatus according to claim 6 comprising a turbine wheel mounted on said shaft in a pressure chamber containing hot pressurized, vaporized working fluid, wherein said shaft passes through a labyrinth seal mounted on the shaft.

8. Apparatus according to claim 7 comprising means for adding the liquid to the chamber in which the seal is located near a disc in the chamber mounted on the shaft and rotatable therewith.

9. Apparatus according to claim 6 further comprising a vaporizer for vaporizing a working fluid, a turbine mounted on said shaft for expanding the working fluid, a condenser for condensing expanded working fluid, a cycle pump for returning condensate from the condenser to the vaporizer and means for supplying the liquid exiting said chamber in which the seal is located via a vessel to a line exiting said condenser and connected to said cycle pump.

10. Apparatus according to claim 9 comprising supply means for supplying the liquid from the output of said cycle pump to said chamber in which the seal is located via said means for injecting liquid into the chamber.